

Claims

- [c1] 1.A rolling cutter insert, comprising:
a generally cylindrical body, a cutting surface, and a bottom surface;
a tapered surface adjacent said generally cylindrical body; and
a generally cylindrical section positioned between said bottom surface and said tapered surface.
- [c2] 2.The device of claim 1, further comprising a radiused corner region adjacent said bottom surface, said radiused corner region being positioned between said bottom surface and said generally cylindrical section.
- [c3] 3.The device of claim 2, wherein said generally cylindrical section is adjacent said radiused corner region.
- [c4] 4.The device of claim 1, wherein said generally cylindrical body has a diameter that is greater than a diameter of said generally cylindrical section.
- [c5] 5.The device of claim 1, further comprising a radiused region positioned between said tapered surface and said generally cylindrical section.

- [c6] 6.The device of claim 2, wherein said radiused corner region defines a transition between said bottom surface and said generally cylindrical section.
- [c7] 7.The device of claim 5, wherein said radiused region defines a transition between said cylindrical section and said tapered surface.
- [c8] 8.The device of claim 1, wherein said tapered surface is formed at an angle of approximately 15 degrees relative to a longitudinal axis of said generally cylindrical body.
- [c9] 9.The device of claim 1, wherein said radiused corner region has a radius of approximately 0.020 inches.
- [c10] 10.The device of claim 5, wherein said radiused region has a radius of approximately 0.20 inches.
- [c11] 11.The device of claim 1, wherein said generally cylindrical section has an axial length of approximately 0.020 inches.
- [c12] 12.The device of claim 1, further comprising a roller cutter drill bit comprised of at least one roller cone, wherein said roller cutter insert is press fit into an opening formed in said roller cone.
- [c13] 13.A rolling cutter insert, comprising:
a generally cylindrical body, a cutting surface, and a bot-

tom surface;
a tapered surface adjacent said generally cylindrical body;
a radiused corner region adjacent said bottom surface;
and
a generally cylindrical section positioned between said radiused corner region and said tapered surface, wherein said radiused corner region defines a transition between said bottom surface and said generally cylindrical section.

[c14] 14.The device of claim 13, wherein said generally cylindrical body has a diameter that is greater than a diameter of said generally cylindrical section.

[c15] 15.The device of claim 13, further comprising a radiused region positioned between said tapered surface and said generally cylindrical region.

[c16] 16.The device of claim 15, wherein said radiused region defines a transition between said generally cylindrical section and said tapered surface.

[c17] 17.The device of claim 13, wherein said tapered surface is formed at an angle of approximately 15 degrees relative to a longitudinal axis of said generally cylindrical body.

[c18] 18.The device of claim 13, further comprising a roller cutter drill bit comprised of at least one roller cone, wherein said roller cutter insert is press fit into an opening formed in said roller cone.

[c19] 19.A rolling cutter insert, comprising:
a generally cylindrical body, a cutting surface, and a bottom surface;
a tapered surface adjacent said generally cylindrical body;
a radiused corner region adjacent said bottom surface;
a generally cylindrical section positioned between said radiused corner region and said tapered surface, wherein said radiused corner region defines a transition between said bottom surface and said generally cylindrical section; and
a radiused region positioned between said tapered surface and said generally cylindrical section, wherein said radiused region defines a transition between said generally cylindrical section and said tapered surface.

[c20] 20.The device of claim 19, wherein said generally cylindrical body has a diameter that is greater than a diameter of said generally cylindrical section.

[c21] 21.The device of claim 19, wherein said tapered surface

is formed at an angle of approximately 15 degrees relative to a longitudinal axis of said generally cylindrical body.

[c22] 22.The device of claim 19, further comprising a roller cutter drill bit comprised of at least one roller cone, wherein said roller cutter insert is press fit into an opening formed in said roller cone.

[c23] 23.A rolling cutter insert, comprising:
a generally cylindrical body, a cutting surface, and a bottom surface;
a tapered surface adjacent said generally cylindrical body; and
a region of material positioned between said bottom surface and said tapered surface, said region of material positioned outside of a volume defined, at least in part, by an intersection of a linear extension of said tapered surface with said bottom surface.

[c24] 24.The device of claim 23, further comprising a generally cylindrical section positioned between said tapered surface and said bottom surface, wherein at least a portion of said generally cylindrical section defines at least a part of said region of material.

[c25] 25.The device of claim 24, further comprising a radiused

corner region between said generally cylindrical section and said bottom surface.

[c26] 26.The device of claim 25, wherein at least a portion of said radiused corner region defines at least part of said region of material.

[c27] 27.The device of claim 25, wherein said generally cylindrical section is adjacent said radiused corner region.

[c28] 28.The device of claim 23, further comprising a radiused corner region positioned adjacent said bottom surface, wherein at least a portion of said radiused corner region defines at least part of said region of material.

[c29] 29.The device of claim 24, wherein said generally cylindrical body has a diameter that is greater than a diameter of said generally cylindrical section.

[c30] 30.The device of claim 24, further comprising a radiused region positioned between said tapered surface and said generally cylindrical section.

[c31] 31.The device of claim 25, wherein said radiused corner region defines a transition between said bottom surface and said generally cylindrical section.

[c32] 32.The device of claim 30, wherein said radiused region defines a transition between said generally cylindrical

section and said tapered surface.

[c33] 33.The device of claim 23, wherein said tapered surface is formed at an angle of approximately 15 degrees relative to a longitudinal axis of said generally cylindrical body.

[c34] 34.A rolling cutter insert, comprising:
a generally cylindrical body;
a cutting surface; and
a bottom portion extending from said generally cylindrical body, said bottom portion comprising a bottom surface and a tapered surface, said tapered surface being formed adjacent said generally cylindrical body, wherein said bottom portion is configured such that there is a region of material positioned between said bottom surface and said tapered surface, said region of material being positioned outside of a volume defined, at least in part, by an intersection of a linear extension of said tapered surface with said bottom surface.

[c35] 35.The device of claim 34, further comprising a generally cylindrical section positioned between said tapered surface and said bottom surface, wherein at least a portion of said generally cylindrical section defines at least a part of said region of material.

- [c36] 36.The device of claim 35, further comprising a radiused corner region between said generally cylindrical section and said bottom surface.
- [c37] 37.The device of claim 36, wherein at least a portion of said radiused corner region defines at least part of said region of material.
- [c38] 38.The device of claim 36, wherein said generally cylindrical section is adjacent said radiused corner region.
- [c39] 39.The device of claim 34, further comprising a radiused corner region positioned adjacent said bottom surface, wherein at least a portion of said radiused corner region defines at least part of said region of material.
- [c40] 40.The device of claim 35, wherein said generally cylindrical body has a diameter that is greater than a diameter of said generally cylindrical section.
- [c41] 41.The device of claim 35, further comprising a radiused region positioned between said tapered surface and said generally cylindrical section.
- [c42] 42.The device of claim 36, wherein said radiused corner region defines a transition between said bottom surface and said generally cylindrical section.
- [c43] 43.The device of claim 41, wherein said radiused region

defines a transition between said generally cylindrical section and said tapered surface.

[c44] 44. The device of claim 34, wherein said tapered surface is formed at an angle of approximately 15 degrees relative to a longitudinal axis of said generally cylindrical body.